SEQUENCE LISTING

<110> MEMORIAL SLOAN-KETTERING CANCER CENTER

<120> IDENTIFICATION AND CHARACTERIZATION OF MULTIPLE SPLICE VARIANTS OF THE MU OPIOID RECEPTOR GENE

<130> (51590)62078WO

<140> PCT/US05/04548
<141> 2005-02-11

<150> 60/544,534
<151> 2004-02-13

<160> 89

<170> PatentIn Ver. 3.3

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Cys Glu His Thr Lys Gly
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tataagattg gaagc 111

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ccggcttgcg gcaccatcgc ctacgggcc 138

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cctgaagtat ccctcaacac agaaaaacga cctcataaca caaaa 142

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aag cct tgg cca ctg agc tac aat gca ggg tagtctccat ttcccttccc 98
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Lys Pro Trp Pro Leu Ser Tyr Asn Ala Gly
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Val Phe

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Val Phe

atttggcagt tatcaaggga cctccagcca agtttgtt 142

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<210> 43
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Lys Gly

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Leu Ser Tyr Asn Ala Gly
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1 5 10 15

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<212> PRT
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<400> 49
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Leu Val Val Tyr Pro Gly Pro Leu Gln Gly Pro Leu Val Arg Tyr Asp
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Leu Pro Ala Ile Leu His Ser Ser Cys Leu Arg Gly Asn Thr Ala Pro
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Ser Pro Ser Gly Gly Ala Phe Leu Leu Ser
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Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
35 40 45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
50 55 60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
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Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
85 90 95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
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Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
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Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
130 135 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145 150 155 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
165 170 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
180 185 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
195 200 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
210 215 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
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Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
245 250 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
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Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
275 280 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
290 295 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305 310 315 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
325 330 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
340 345 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
355 360 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
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         35                  40                  45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
     50                  55                  60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
 65                  70                  75                  80

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    130                 135                 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145                 150                 155                 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
                165                 170                 175

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            180                 185                 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
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Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
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Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
                245                 250                 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
            260                 265                 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
        275                 280                 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
    290                 295                 300
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Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
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His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
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Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
340 345 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
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Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
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<211> 403
<212> PRT
<213> Homo sapiens

<400> 55

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			20					25					30		
Asn	Leu	Ser	His	Leu	Asp	Gly	Asn	Leu	Ser	Asp	Pro	Cys	Gly	Pro	Asn
		35					40					45			
Arg	Thr	Asp	Leu	Gly	Gly	Arg	Asp	Ser	Leu	Cys	Pro	Pro	Thr	Gly	Ser
	50					55					60				
Pro	Ser	Met	Ile	Thr	Ala	Ile	Thr	Ile	Met	Ala	Leu	Tyr	Ser	Ile	Val
65					70					75					80
Cys	Val	Val	Gly	Leu	Phe	Gly	Asn	Phe	Leu	Val	Met	Tyr	Val	Ile	Val
				85					90					95	
Arg	Tyr	Thr	Lys	Met	Lys	Thr	Ala	Thr	Asn	Ile	Tyr	Ile	Phe	Asn	Leu
			100					105					110		
Ala	Leu	Ala	Asp	Ala	Leu	Ala	Thr	Ser	Thr	Leu	Pro	Phe	Gln	Ser	Val
		115					120					125			
Asn	Tyr	Leu	Met	Gly	Thr	Trp	Pro	Phe	Gly	Thr	Ile	Leu	Cys	Lys	Ile
	130					135					140				
Val	Ile	Ser	Ile	Asp	Tyr	Tyr	Asn	Met	Phe	Thr	Ser	Ile	Phe	Thr	Leu
145					150					155					160
Cys	Thr	Met	Ser	Val	Asp	Arg	Tyr	Ile	Ala	Val	Cys	His	Pro	Val	Lys
				165					170					175	
Ala	Leu	Asp	Phe	Arg	Thr	Pro	Arg	Asn	Ala	Lys	Ile	Ile	Asn	Val	Cys
			180					185					190		
Asn	Trp	Ile	Leu	Ser	Ser	Ala	Ile	Gly	Leu	Pro	Val	Met	Phe	Met	Ala
		195					200					205			
Thr	Thr	Lys	Tyr	Arg	Gln	Gly	Ser	Ile	Asp	Cys	Thr	Leu	Thr	Phe	Ser
	210					215					220				

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His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225                 230                 235                 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
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Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
            260                 265                 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
        275                 280                 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
    290                 295                 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305                 310                 315                 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
                325                 330                 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
            340                 345                 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
        355                 360                 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
    370                 375                 380

Thr Asn His Gln Gly Pro Pro Ala Lys Phe Val Ala Asp Gln Leu Ala
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<210> 56
<211> 1251
<212> DNA
<213> Homo sapiens

<400> 56
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<210> 57
<211> 389
<212> PRT
<213> Homo sapiens

<400> 57

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Leu	Ala	Tyr	Ser	Ser	Cys	Ser	Pro	Ala	Pro	Ser	Pro	Gly	Ser	Trp	Val
			20					25					30		
Asn	Leu	Ser	His	Leu	Asp	Gly	Asn	Leu	Ser	Asp	Pro	Cys	Gly	Pro	Asn
		35					40					45			
Arg	Thr	Asp	Leu	Gly	Gly	Arg	Asp	Ser	Leu	Cys	Pro	Pro	Thr	Gly	Ser
	50					55					60				
Pro	Ser	Met	Ile	Thr	Ala	Ile	Thr	Ile	Met	Ala	Leu	Tyr	Ser	Ile	Val
65					70					75					80
Cys	Val	Val	Gly	Leu	Phe	Gly	Asn	Phe	Leu	Val	Met	Tyr	Val	Ile	Val
				85					90					95	
Arg	Tyr	Thr	Lys	Met	Lys	Thr	Ala	Thr	Asn	Ile	Tyr	Val	Phe	Asn	Leu
			100					105					110		
Ala	Leu	Ala	Asp	Ala	Leu	Ala	Thr	Ser	Thr	Leu	Pro	Phe	Gln	Ser	Val
		115					120					125			
Asn	Tyr	Leu	Met	Gly	Thr	Trp	Pro	Phe	Gly	Thr	Ile	Leu	Cys	Lys	Ile
	130					135					140				
Val	Ile	Ser	Ile	Asp	Tyr	Tyr	Asn	Met	Phe	Thr	Ser	Ile	Phe	Thr	Leu
145					150					155					160
Cys	Thr	Met	Ser	Val	Asp	Arg	Tyr	Ile	Ala	Val	Cys	His	Pro	Val	Lys
				165					170					175	
Ala	Leu	Asp	Phe	Arg	Thr	Pro	Arg	Asn	Ala	Lys	Ile	Ile	Asn	Val	Cys
			180					185					190		
Asn	Trp	Ile	Leu	Ser	Ser	Ala	Ile	Gly	Leu	Pro	Val	Met	Phe	Met	Ala
		195					200					205			
Thr	Thr	Lys	Tyr	Arg	Gln	Gly	Ser	Ile	Asp	Cys	Thr	Leu	Thr	Phe	Ser
	210					215					220				

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His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225                 230                 235                 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
                245                 250                 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
            260                 265                 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
        275                 280                 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
    290                 295                 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305                 310                 315                 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
                325                 330                 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
            340                 345                 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
        355                 360                 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
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Thr Asn His Gln Ser
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<210> 58
<211> 1402
<212> DNA
<213> Homo sapiens

<400> 58

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<210> 59
<211> 410
<212> PRT
<213> Homo sapiens

<400> 59

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Leu	Ala	Tyr	Ser	Ser	Cys	Ser	Pro	Ala	Pro	Ser	Pro	Gly	Ser	Trp	Val
			20					25				30			
Asn	Leu	Ser	His	Leu	Asp	Gly	Asn	Leu	Ser	Asp	Pro	Cys	Gly	Pro	Asn
		35					40					45			
Arg	Thr	Asp	Leu	Gly	Gly	Arg	Asp	Ser	Leu	Cys	Pro	Pro	Thr	Gly	Ser
	50					55					60				
Pro	Ser	Met	Ile	Thr	Ala	Ile	Thr	Ile	Met	Ala	Leu	Tyr	Ser	Ile	Val
65					70					75					80
Cys	Val	Val	Gly	Leu	Phe	Gly	Asn	Phe	Leu	Val	Met	Tyr	Val	Ile	Val
				85					90					95	
Arg	Tyr	Thr	Lys	Met	Lys	Thr	Ala	Thr	Asn	Ile	Tyr	Ile	Phe	Asn	Leu
			100					105					110		
Ala	Leu	Ala	Asp	Ala	Leu	Ala	Thr	Ser	Thr	Leu	Pro	Phe	Gln	Ser	Val
		115					120					125			
Asn	Tyr	Leu	Met	Gly	Thr	Trp	Pro	Phe	Gly	Thr	Ile	Leu	Cys	Lys	Ile
	130					135					140				
Val	Ile	Ser	Ile	Asp	Tyr	Tyr	Asn	Met	Phe	Thr	Ser	Ile	Phe	Thr	Leu
145					150					155					160
Cys	Thr	Met	Ser	Val	Asp	Arg	Tyr	Ile	Ala	Val	Cys	His	Pro	Val	Lys
				165					170					175	
Ala	Leu	Asp	Phe	Arg	Thr	Pro	Arg	Asn	Ala	Lys	Ile	Ile	Asn	Val	Cys
			180					185					190		
Asn	Trp	Ile	Leu	Ser	Ser	Ala	Ile	Gly	Leu	Pro	Val	Met	Phe	Met	Ala
		195					200					205			
Thr	Thr	Lys	Tyr	Arg	Gln	Gly	Ser	Ile	Asp	Cys	Thr	Leu	Thr	Phe	Ser
	210					215					220				
His	Pro	Thr	Trp	Tyr	Trp	Glu	Asn	Leu	Leu	Lys	Ile	Cys	Val	Phe	Ile
225					230					235					240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
245 250 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
260 265 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
275 280 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
290 295 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305 310 315 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
325 330 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
340 345 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
355 360 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
370 375 380

Thr Asn His Gln Val Glu Leu Asn Leu Asp Cys His Cys Glu Asn Ala
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Lys Pro Trp Pro Leu Ser Tyr Asn Ala Gly
405 410

<210> 60
<211> 2601
<212> DNA
<213> Homo sapiens

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<210> 61
<211> 402
<212> PRT
<213> Homo sapiens

<400> 61

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             20                  25                  30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
         35                  40                  45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
     50                  55                  60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
 65                  70                  75                  80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
                 85                  90                  95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
            100                 105                 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
        115                 120                 125
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Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
130 135 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145 150 155 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
165 170 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
180 185 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
195 200 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
210 215 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225 230 235 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
245 250 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
260 265 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
275 280 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
290 295 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305 310 315 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
325 330 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
340 345 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
355 360 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
370 375 380

Thr Asn His Gln Ile Arg Asp Pro Ile Ser Asn Leu Pro Arg Val Ser
385 390 395 400

Val Phe

<210> 62
<211> 400
<212> PRT
<213> Homo sapiens

<400> 62

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Met Asp Ser Ser Ala Ala Pro Thr Asn Ala Ser Asn Cys Thr Asp Ala
  1               5                  10                  15

Leu Ala Tyr Ser Ser Cys Ser Pro Ala Pro Ser Pro Gly Ser Trp Val
             20                  25                  30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
         35                  40                  45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
     50                  55                  60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
 65                  70                  75                  80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
                 85                  90                  95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
            100                 105                 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
        115                 120                 125

Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
    130                 135                 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145                 150                 155                 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
                165                 170                 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
            180                 185                 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
        195                 200                 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
    210                 215                 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225                 230                 235                 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
                245                 250                 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
            260                 265                 270
```

```
Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
        275                 280                 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
    290                 295                 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305                 310                 315                 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
                325                 330                 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
            340                 345                 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
        355                 360                 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
    370                 375                 380

Thr Asn His Gln Leu Glu Asn Leu Glu Ala Glu Thr Ala Pro Leu Pro
385                 390                 395                 400
```

<210> 63
<211> 392
<212> PRT
<213> Homo sapiens

<400> 63

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Met Asp Ser Ser Ala Ala Pro Thr Asn Ala Ser Asn Cys Thr Asp Ala
  1               5                  10                  15

Leu Ala Tyr Ser Ser Cys Ser Pro Ala Pro Ser Pro Gly Ser Trp Val
            20                  25                  30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
        35                  40                  45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
    50                  55                  60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
65                  70                  75                  80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
                85                  90                  95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
            100                 105                 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
        115                 120                 125
```

```
Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
    130                 135                 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145                 150                 155                 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
                165                 170                 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
            180                 185                 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
        195                 200                 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
    210                 215                 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225                 230                 235                 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
                245                 250                 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
            260                 265                 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
        275                 280                 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
    290                 295                 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305                 310                 315                 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
                325                 330                 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
            340                 345                 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
        355                 360                 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
    370                 375                 380

Thr Asn His Gln Val Arg Ser Leu
385                 390
```

<210> 64
<211> 418
<212> PRT
<213> Homo sapiens

<400> 64

Met Asp Ser Ser Ala Ala Pro Thr Asn Ala Ser Asn Cys Thr Asp Ala
1 5 10 15

Leu Ala Tyr Ser Ser Cys Ser Pro Ala Pro Ser Pro Gly Ser Trp Val
20 25 30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
35 40 45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
50 55 60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
65 70 75 80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
85 90 95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
100 105 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
115 120 125

Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
130 135 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145 150 155 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
165 170 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
180 185 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
195 200 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
210 215 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225 230 235 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
245 250 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
260 265 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
275 280 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
290 295 300

```
Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305                 310                 315                 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
                325                 330                 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
            340                 345                 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
        355                 360                 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
    370                 375                 380

Thr Asn His Gln Pro Pro Leu Ala Val Ser Met Ala Gln Ile Phe Thr
385                 390                 395                 400

Arg Tyr Pro Pro Pro Thr His Arg Glu Lys Thr Cys Asn Asp Tyr Met
                405                 410                 415

Lys Arg
```

<210> 65
<211> 446
<212> PRT
<213> Homo sapiens

<400> 65

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Met Asp Ser Ser Ala Ala Pro Thr Asn Ala Ser Asn Cys Thr Asp Ala
  1                 5                  10                  15

Leu Ala Tyr Ser Ser Cys Ser Pro Ala Pro Ser Pro Gly Ser Trp Val
            20                  25                  30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
        35                  40                  45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
    50                  55                  60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
65                  70                  75                  80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
                85                  90                  95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
            100                 105                 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
        115                 120                 125

Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
    130                 135                 140
```

```
Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145                 150                 155                 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
                165                 170                 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
            180                 185                 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
        195                 200                 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
    210                 215                 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225                 230                 235                 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
                245                 250                 255

Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
            260                 265                 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
        275                 280                 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
    290                 295                 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305                 310                 315                 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
                325                 330                 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
            340                 345                 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
        355                 360                 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
    370                 375                 380

Thr Asn His Gln Cys Leu Pro Ile Pro Ser Leu Ser Cys Trp Ala Leu
385                 390                 395                 400

Glu His Gly Cys Leu Val Val Tyr Pro Gly Pro Leu Gln Gly Pro Leu
                405                 410                 415

Val Arg Tyr Asp Leu Pro Ala Ile Leu His Ser Ser Cys Leu Arg Gly
            420                 425                 430

Asn Thr Ala Pro Ser Pro Ser Gly Gly Ala Phe Leu Leu Ser
        435                 440                 445
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<210> 66
<211> 388
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus sequence

<400> 66

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Met Asp Ser Ser Ala Ala Pro Thr Asn Ala Ser Asn Cys Thr Asp Ala
  1               5                  10                  15

Leu Ala Tyr Ser Ser Cys Ser Pro Ala Pro Ser Pro Gly Ser Trp Val
             20                  25                  30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn
         35                  40                  45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser
     50                  55                  60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val
 65                  70                  75                  80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val
                 85                  90                  95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu
            100                 105                 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
        115                 120                 125

Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile
    130                 135                 140

Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145                 150                 155                 160

Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
                165                 170                 175

Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
            180                 185                 190

Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala
        195                 200                 205

Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
    210                 215                 220

His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225                 230                 235                 240

Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
                245                 250                 255
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Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu
260 265 270

Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
275 280 285

Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
290 295 300

Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305 310 315 320

His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val
325 330 335

Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
340 345 350

Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile
355 360 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg
370 375 380

Thr Asn His Gln
385

<210> 67
<211> 7
<212> PRT
<213> Rattus norvegicus

<400> 67
Asn His Gln Val Cys Ala Phe
1 5

<210> 68
<211> 111
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(21)

<400> 68
aac cac cag gta tgt gct ttc tagaattacg gataacatat aaaaatacca 51
Asn His Gln Val Cys Ala Phe
1 5

tatctggtac cagtctaaga tttaaatctt taagaaggtc agtaacttga ggcaaagtcc 111

<210> 69
<211> 246
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(204)

<400> 69
aac cac cag cca gcc ctg gca gtc agc gtg gcc cag atc ttt aca gga 48
Asn His Gln Pro Ala Leu Ala Val Ser Val Ala Gln Ile Phe Thr Gly
1 5 10 15

tat cct tct ccg act cat ggt gaa aaa ccc tgc aag agt tac agg gac 96
Tyr Pro Ser Pro Thr His Gly Glu Lys Pro Cys Lys Ser Tyr Arg Asp
20 25 30

aga cct aga ccc tgt gga aga acg tgg tct ttg aaa tcg cgt gca gaa 144
Arg Pro Arg Pro Cys Gly Arg Thr Trp Ser Leu Lys Ser Arg Ala Glu
35 40 45

tcc aat gtg gag cac ttc cat tgt gga gcc gca tta atc tat aac aat 192
Ser Asn Val Glu His Phe His Cys Gly Ala Ala Leu Ile Tyr Asn Asn
50 55 60

gtg aat ttc atc taaacacagg gatgtgctag tgagaagttt ggaggtgcag gc 246
Val Asn Phe Ile
65

<210> 70
<211> 68
<212> PRT
<213> Rattus norvegicus

<400> 70
Asn His Gln Pro Ala Leu Ala Val Ser Val Ala Gln Ile Phe Thr Gly
1 5 10 15

Tyr Pro Ser Pro Thr His Gly Glu Lys Pro Cys Lys Ser Tyr Arg Asp
20 25 30

Arg Pro Arg Pro Cys Gly Arg Thr Trp Ser Leu Lys Ser Arg Ala Glu
35 40 45

Ser Asn Val Glu His Phe His Cys Gly Ala Ala Leu Ile Tyr Asn Asn
50 55 60

Val Asn Phe Ile
65

<210> 71
<211> 293
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(255)

<400> 71
aac cac cag cca gcc ctg gca gtc agc gtg gcc cag atc ttt aca gga 48
Asn His Gln Pro Ala Leu Ala Val Ser Val Ala Gln Ile Phe Thr Gly
1 5 10 15

tat cct tct ccg act cat ggt gaa aaa ccc tgc aag agt tac agg gac 96
Tyr Pro Ser Pro Thr His Gly Glu Lys Pro Cys Lys Ser Tyr Arg Asp
20 25 30

aga cct aga ccc tgt gga aga acg tgg tct ttg aaa tcg cgt gca gaa 144
Arg Pro Arg Pro Cys Gly Arg Thr Trp Ser Leu Lys Ser Arg Ala Glu
35 40 45

tcc aat gtg gag cac ttc cat tgt gga gcc gca tta atc tat aac aat 192
Ser Asn Val Glu His Phe His Cys Gly Ala Ala Leu Ile Tyr Asn Asn
50 55 60

gaa cta aaa ata ggg cca gtg tcc tgg ctc cag atg cct gcg cac gtg 240
Glu Leu Lys Ile Gly Pro Val Ser Trp Leu Gln Met Pro Ala His Val
65 70 75 80

ctc gtg cgc ccc tgg taatgaacac gggctccgat tctgaatatc cttctgtg 293
Leu Val Arg Pro Trp
85

<210> 72
<211> 85
<212> PRT
<213> Rattus norvegicus

<400> 72
Asn His Gln Pro Ala Leu Ala Val Ser Val Ala Gln Ile Phe Thr Gly
1 5 10 15

Tyr Pro Ser Pro Thr His Gly Glu Lys Pro Cys Lys Ser Tyr Arg Asp
20 25 30

Arg Pro Arg Pro Cys Gly Arg Thr Trp Ser Leu Lys Ser Arg Ala Glu
35 40 45

Ser Asn Val Glu His Phe His Cys Gly Ala Ala Leu Ile Tyr Asn Asn
50 55 60

Glu Leu Lys Ile Gly Pro Val Ser Trp Leu Gln Met Pro Ala His Val
65 70 75 80

Leu Val Arg Pro Trp
85

<210> 73
<211> 4
<212> PRT
<213> Rattus norvegicus

<400> 73
Asn His Gln Thr
1

<210> 74
<211> 204
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(12)

<400> 74
aac cac cag acc tagaccctgt ggaagaacgt ggtctttgaa atcgcgtgca 52
Asn His Gln Thr
1

gaatccaatg tggagcactt ccattgtgga gccgcattaa tctataacaa tgaactaaaa 112

atagggccag tgtcctggct ccagatgcct gcgcacgtgc tcgtgcgccc ctggtaatga 172

acacgggctc cgattctgaa tatccttctg tg- 204

<210> 75
<211> 10
<212> PRT
<213> Rattus norvegicus

<400> 75
Asn His Gln Glu Pro Gln Ser Val Glu Thr
1 5 10

<210> 76
<211> 438
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(30)

<400> 76
aac cac cag gag cct cag tca gta gag aca tgatgtgaat gaaccaactg 50
Asn His Gln Glu Pro Gln Ser Val Glu Thr
1 5 10

attaaacaag gttttctgaa cactgaaata caacacaaat gtagaggtta ctagagaaaa 110

tttgtagcct gaaaattcaa ttacggaaac caaatgagtg tgagtgtata cattttaagg 170

cctcagagag attttatttc atgactaaca acatgaccca aagcacctaa actgtggtga 230

ttagattaca aagacaattc tagagcctgg gactaaagaa atgttagccc tcacacagac 290

aggcctcaca cttcagtaat ggaatgagca aattagatta gtgagaaaga tggaggaaag 350

actcgaaata ttttcatatc ttcctgtgga actccacaag aaaaccaata gaataaacca 410

acctgctgga cccttggtgg ctcttacc 438

<210> 77
<211> 7
<212> PRT
<213> Rattus norvegicus

<400> 77
Asn His Gln Gly Ala Glu Leu
1 5

<210> 78
<211> 891
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(21)

<400> 78
aac cac cag gga gca gag tta tgaggattaa tacaaaaaga ctaccacgtc 51
Asn His Gln Gly Ala Glu Leu
1 5

cttcagagga gcagccagag ggaggcccct ggcccccaca atggtaggtg ctcccacttg 111

ctgtctcccc atcacacatc tctcactgtt ccctttgttt tcagctatgg ctacccggca 171

tagcctttat tcagtctttc tgactgacct cagatttatg caatacaacc tagatggatc 231

cgcctcagga gacaggaatg ctcataccga agtgggaagt gtggctaatg caatacacgt 291

gagccaacac ccccagagag catggtggta atggcggcag agtcatcccc cactcaaagg 351

caattattaa caaatttatc tccctgcttc cagctcagaa atcagagcca gacagaaatg 411

ggtttctctg ttgccttctc tctctctctc tctctctctc tctctctctc tctctctctc 471

tcattgttat ccacatcaac acataaccct tttacttttt ctaagcagcc ctctttttag 531

gggttttcaa actctcgcct gcactttgaa agggtaagga tttaaattga ttttttttc 591

ttctttctcc aacccaggga taacattcta gagcaagcaa tttgaaacta tctatacaaa 651

ctgagcttca aatctttggc atttaaatat tttgctttca ttggagaaaa ggaagagcat 711

aggaaagctt gggctcttcc tcccctccct aggtgtcctg ctttgtcttc cctcccaggc 771

ttgtaggggt gtggctgctt ggtagcttcc tctaggacac tgttgggcct tcttatcctg 831

cctgacccac ctgaccttcc tctaatggtc aacctctcta ttccagcaca ttcctgtttc 891

<210> 79
<211> 1628
<212> DNA
<213> Rattus norvegicus

<400> 79
gttacagcct acctagtccg cagcaggcct tcagcaccat ggacagcagc accggcccag 60
ggaacaccag cgactgctca gaccccttag ctcaggcaag ttgctcccca gcacctggct 120
cctggctcaa cttgtcccac gttgatggca accagtccga tccatgcggt ctgaaccgca 180
ccgggcttgg cgggaacgac agcctgtgcc ctcagaccgg cagcccttcc atggtcacag 240
ccattaccat catggccctc tactctatcg tgtgtgtagt gggcctcttc ggaaacttcc 300
tggtcatgta tgtgattgta agatacacca aaatgaagac tgccaccaac atctacattt 360
tcaaccttgc tctggcagac gccttagcga ccagtacact gccctttcag agtgtcaact 420
acctgatggg aacatggccc ttcggaacca tcctctgcaa gatcgtgatt tcaatagatt 480
actacaacat gttcaccagc atattcaccc tctgcaccat gagcgtggac cgctacattg 540
ctgtctgcca cccagtcaaa gccctggatt tccgtacccc ccgaaatgcc aaaatcgtca 600
acgtctgcaa ctggatcctc tcttctgcca tcggtctgcc tgtaatgttc atggcaacca 660
caaaatacag gcaggggtcc atagattgca ccctcacgtt ctcccaccca acctggtact 720
gggagaacct gctcaaaatc tgtgtcttta tcttcgcttt catcatgccg gtcctcatca 780
tcactgtgtg ttacggcctg atgatcttac gactcaagag cgttcgcatg ctatcgggct 840
ccaaagaaaa ggacaggaat ttgcgcagga tcacccggat ggtgctggtg gtcgtggctg 900
tatttatcgt ctgctggacc cccatccaca tctacgtcat catcaaagcg ctgatcacga 960
ttccagaaac cacatttcag accgtttcct ggcacttctg cattgctttg ggttacacga 1020
acagctgcct gaatccagtt cttttacgcc ttcctgggat gaaaacttca agcgatgctt 1080
cagaagagtt ctgcatccca acctcgtcca cgatcgaaca gcaaaactcc actcgagtcc 1140
gtcagaacac tagggaacat ccctccacgg ctaatacagt ggatcgaact aaccaccagg 1200
agcctcagtc agtagagaca tgatgtgaat gaaccaactg attaaacaag gttttctgaa 1260
cactgaaata caacacaaat gtagaggtta ctagagaaaa tttgtagcct gaaaattcaa 1320
ttacggaaac caaatgagtg tgagtgtata cattttaagg cctcagagag attttatttc 1380
atgactaaca acatgaccca aagcacctaa actgtggtga ttagattaca aagacaattc 1440
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<210> 80
<211> 394
<212> PRT
<213> Rattus norvegicus

<400> 80

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20 25 30

Ser His Val Asp Gly Asn Gln Ser Asp Pro Cys Gly Leu Asn Arg Thr
35 40 45

Gly Leu Gly Gly Asn Asp Ser Leu Cys Pro Gln Thr Gly Ser Pro Ser
50 55 60

Met Val Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val Cys Val
65 70 75 80

Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val Arg Tyr
85 90 95

Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu Ala Leu
100 105 110

Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val Asn Tyr
115 120 125

Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile Val Ile
130 135 140

Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu Cys Thr
145 150 155 160

Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys Ala Leu
165 170 175

Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Val Asn Val Cys Asn Trp
180 185 190

Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala Thr Thr
195 200 205

Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser His Pro
210 215 220

Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile Phe Ala
225 230 235 240

Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile
245 250 255

Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp
260 265 270

Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val Ala Val
275 280 285

Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala
290 295 300

Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe
305 310 315 320

Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Leu
325 330 335

Arg Leu Pro Gly Met Lys Thr Ser Ser Asp Ala Ser Glu Glu Phe Cys
340 345 350

Ile Pro Thr Ser Ser Thr Ile Glu Gln Gln Asn Ser Thr Arg Val Arg
355 360 365

Gln Asn Thr Arg Glu His Pro Ser Thr Ala Asn Thr Val Asp Arg Thr
370 375 380

Asn His Gln Glu Pro Gln Ser Val Glu Thr
385 390

<210> 81
<211> 1433
<212> DNA
<213> Rattus norvegicus

<400> 81
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<210> 82
<211> 451
<212> PRT
<213> Rattus norvegicus

<400> 82

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Ser His Val Asp Gly Asn Gln Ser Asp Pro Cys Gly Leu Asn Arg Thr
35 40 45

Gly Leu Gly Gly Asn Asp Ser Leu Cys Pro Gln Thr Gly Ser Pro Ser
50 55 60

Met Val Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val Cys Val
65 70 75 80

Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val Arg Tyr
85 90 95

Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu Ala Leu
100 105 110

Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val Asn Tyr
115 120 125

Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile Val Ile
130 135 140

Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu Cys Thr
145 150 155 160

Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys Ala Leu
165 170 175

Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Val Asn Val Cys Asn Trp
180 185 190

Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala Thr Thr
195 200 205

Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser His Pro
210 215 220

Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile Phe Ala
225 230 235 240

Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile
245 250 255

Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp
260 265 270

Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val Ala Val
275 280 285

Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala
290 295 300

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Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe
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Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Tyr
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Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe Cys Ile
            340                 345                 350

Pro Thr Ser Ser Thr Ile Glu Gln Gln Asn Ser Thr Arg Val Arg Gln
        355                 360                 365

Asn Thr Arg Glu His Pro Ser Thr Ala Asn Thr Val Asp Arg Thr Asn
    370                 375                 380

His Gln Pro Ala Leu Ala Val Ser Val Ala Gln Ile Phe Thr Gly Tyr
385                 390                 395                 400

Pro Ser Pro Thr His Gly Glu Lys Pro Cys Lys Ser Tyr Arg Asp Arg
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Pro Arg Pro Cys Gly Arg Thr Trp Ser Leu Lys Ser Arg Ala Glu Ser
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<210> 83
<211> 1480
<212> DNA
<213> Rattus norvegicus

<400> 83

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<210> 84
<211> 468
<212> PRT
<213> Rattus norvegicus

<400> 84

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			20					25				30			
Ser	His	Val	Asp	Gly	Asn	Gln	Ser	Asp	Pro	Cys	Gly	Leu	Asn	Arg	Thr
		35					40					45			
Gly	Leu	Gly	Gly	Asn	Asp	Ser	Leu	Cys	Pro	Gln	Thr	Gly	Ser	Pro	Ser
	50					55					60				
Met	Val	Thr	Ala	Ile	Thr	Ile	Met	Ala	Leu	Tyr	Ser	Ile	Val	Cys	Val
65					70					75					80
Val	Gly	Leu	Phe	Gly	Asn	Phe	Leu	Val	Met	Tyr	Val	Ile	Val	Arg	Tyr
				85					90					95	
Thr	Lys	Met	Lys	Thr	Ala	Thr	Asn	Ile	Tyr	Ile	Phe	Asn	Leu	Ala	Leu
			100					105					110		
Ala	Asp	Ala	Leu	Ala	Thr	Ser	Thr	Leu	Pro	Phe	Gln	Ser	Val	Asn	Tyr
		115					120					125			
Leu	Met	Gly	Thr	Trp	Pro	Phe	Gly	Thr	Ile	Leu	Cys	Lys	Ile	Val	Ile
	130					135					140				
Ser	Ile	Asp	Tyr	Tyr	Asn	Met	Phe	Thr	Ser	Ile	Phe	Thr	Leu	Cys	Thr
145					150					155					160
Met	Ser	Val	Asp	Arg	Tyr	Ile	Ala	Val	Cys	His	Pro	Val	Lys	Ala	Leu
				165					170					175	
Asp	Phe	Arg	Thr	Pro	Arg	Asn	Ala	Lys	Ile	Val	Asn	Val	Cys	Asn	Trp
			180					185					190		
Ile	Leu	Ser	Ser	Ala	Ile	Gly	Leu	Pro	Val	Met	Phe	Met	Ala	Thr	Thr
		195					200					205			
Lys	Tyr	Arg	Gln	Gly	Ser	Ile	Asp	Cys	Thr	Leu	Thr	Phe	Ser	His	Pro
	210					215					220				
Thr	Trp	Tyr	Trp	Glu	Asn	Leu	Leu	Lys	Ile	Cys	Val	Phe	Ile	Phe	Ala
225					230					235					240

Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile
245 250 255

Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp
260 265 270

Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val Ala Val
275 280 285

Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala
290 295 300

Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe
305 310 315 320

Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Tyr
325 330 335

Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe Cys Ile
340 345 350

Pro Thr Ser Ser Thr Ile Glu Gln Gln Asn Ser Thr Arg Val Arg Gln
355 360 365

Asn Thr Arg Glu His Pro Ser Thr Ala Asn Thr Val Asp Arg Thr Asn
370 375 380

His Gln Pro Ala Leu Ala Val Ser Val Ala Gln Ile Phe Thr Gly Tyr
385 390 395 400

Pro Ser Pro Thr His Gly Glu Lys Pro Cys Lys Ser Tyr Arg Asp Arg
405 410 415

Pro Arg Pro Cys Gly Arg Thr Trp Ser Leu Lys Ser Arg Ala Glu Ser
420 425 430

Asn Val Glu His Phe His Cys Gly Ala Ala Leu Ile Tyr Asn Asn Glu
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Leu Lys Ile Gly Pro Val Ser Trp Leu Gln Met Pro Ala His Val Leu
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Val Arg Pro Trp
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<210> 85
<211> 1385
<212> DNA
<213> Rattus norvegicus

<400> 85
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<210> 86
<211> 387
<212> PRT
<213> Rattus norvegicus

<400> 86

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			20					25				30			
Ser	His	Val	Asp	Gly	Asn	Gln	Ser	Asp	Pro	Cys	Gly	Leu	Asn	Arg	Thr
		35					40					45			
Gly	Leu	Gly	Gly	Asn	Asp	Ser	Leu	Cys	Pro	Gln	Thr	Gly	Ser	Pro	Ser
	50					55					60				
Met	Val	Thr	Ala	Ile	Thr	Ile	Met	Ala	Leu	Tyr	Ser	Ile	Val	Cys	Val
65					70					75					80
Val	Gly	Leu	Phe	Gly	Asn	Phe	Leu	Val	Met	Tyr	Val	Ile	Val	Arg	Tyr
				85					90					95	
Thr	Lys	Met	Lys	Thr	Ala	Thr	Asn	Ile	Tyr	Ile	Phe	Asn	Leu	Ala	Leu
			100					105					110		
Ala	Asp	Ala	Leu	Ala	Thr	Ser	Thr	Leu	Pro	Phe	Gln	Ser	Val	Asn	Tyr
		115					120					125			
Leu	Met	Gly	Thr	Trp	Pro	Phe	Gly	Thr	Ile	Leu	Cys	Lys	Ile	Val	Ile
	130					135					140				
Ser	Ile	Asp	Tyr	Tyr	Asn	Met	Phe	Thr	Ser	Ile	Phe	Thr	Leu	Cys	Thr
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Met	Ser	Val	Asp	Arg	Tyr	Ile	Ala	Val	Cys	His	Pro	Val	Lys	Ala	Leu
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Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Val Asn Val Cys Asn Trp
180 185 190

Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala Thr Thr
195 200 205

Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser His Pro
210 215 220

Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Val Phe Ala
225 230 235 240

Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile
245 250 255

Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp
260 265 270

Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val Ala Val
275 280 285

Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala
290 295 300

Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe
305 310 315 320

Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Tyr
325 330 335

Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe Cys Ile
340 345 350

Pro Thr Ser Ser Thr Ile Glu Gln Gln Asn Ser Thr Arg Val Arg Gln
355 360 365

Asn Thr Arg Glu His Pro Ser Thr Ala Asn Thr Val Asp Arg Thr Asn
370 375 380

His Gln Thr
385

<210> 87
<211> 2078
<212> DNA
<213> Rattus norvegicus

<400> 87
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<210> 88
<211> 390
<212> PRT
<213> Rattus norvegicus

<400> 88
Met Asp Ser Ser Thr Gly Pro Gly Asn Thr Ser Asp Cys Ser Asp Pro
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35 40 45

Gly Leu Gly Gly Asn Asp Ser Leu Cys Pro Gln Thr Gly Ser Pro Ser
50 55 60

Met Val Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val Cys Val
65 70 75 80

Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val Arg Tyr
85 90 95

Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu Ala Leu
100 105 110

Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val Asn Tyr
115 120 125

Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile Val Ile
130 135 140

Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu Cys Thr
145 150 155 160

Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys Ala Leu
165 170 175

Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Val Asn Val Cys Asn Trp
180 185 190

Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala Thr Thr
195 200 205

Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser His Pro
210 215 220

Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile Phe Ala
225 230 235 240

Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu Met Ile
245 250 255

Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu Lys Asp
260 265 270

Arg Asn Leu Arg Gly Ile Thr Arg Met Val Leu Val Val Val Ala Val
275 280 285

Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile Lys Ala
290 295 300

Leu Ile Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp His Phe
305 310 315 320

Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val Leu Tyr
325 330 335

Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe Cys Ile
340 345 350

Pro Thr Ser Ser Thr Ile Glu Gln Gln Asn Ser Thr Arg Val Arg Gln
355 360 365

Asn Thr Arg Glu His Pro Ser Thr Ala Asn Thr Val Asp Arg Thr Asn
370 375 380

His Gln Gly Ala Glu Leu
385 390

<210> 89
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide linker

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1 5 10 15